

SWBAT: calculate electrical power

Jan 4-7:20 AM

Welcome!!!

H. Leslie Grebe

SECA Physics
Tuesday 11 March 2014

* Pick up:

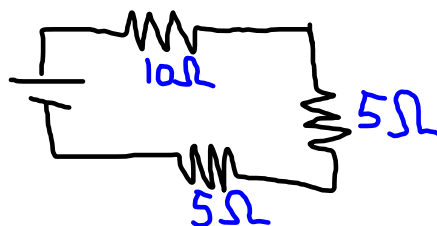
- slip of paper (for later)
- concept sheet (yellow)

Centering

Opening Questions:

Is this a series or parallel circuit? How much total resistance would you guess there is?

$$R = 10\Omega + 5\Omega + 5\Omega$$



Sep 7-7:04 AM



Mystery Resistor - extra credit

- You may work alone or with at most one other person of your choosing.
- Get a "Mystery Resistor" labeled with a letter from Leslie
- Use the same equipment that our teams used in class. Take measurements that will allow you to calculate the resistance (in Ohms) of your resistor.
- You may work when there is spare time in class or arrange other time with Leslie.

Due by 3:00 Friday 3/28

Jan 19-7:12 AM

Concept sheet: 6 rows total

Concept	Meaning	Symbol	Units	Analogy
CHARGE	PROPERTY OF PROTONS & ELECTRONS THAT CAUSES ATTRACTION & REPULSION	q	COULOMBS C	
VOLTAGE = ELECTRIC POTENTIAL	POTENTIAL BASED ON POSITION IN AN ELECTRIC FIELD "PUSH"	V	VOLTS V $V = \frac{J}{C}$	- PERSON PEDALING \Rightarrow THE PUSH
CURRENT	THE FLOW OF ELECTRIC CHARGE $= \frac{\text{CHARGE}}{\text{TIME}}$	I $I = \frac{q}{t}$	AMPERE A $1A = \frac{1C}{s}$	- WHEEL CHAINS MOVING
RESISTANCE	OPPOSITION OF CURRENT "AGAINST THE FLOW"	R	OHMS Ω	BRAKES
OHM'S LAW	VOLTAGE = CURRENT TIMES RESISTANCE	$V = I \cdot R$	$V = I \cdot \Omega$	HOW HARD DO YOU PEDAL? BRAKE AFFECTS SPEED
POWER = CURRENT X VOLTAGE	AMOUNT OF WORK PER SECOND $= \text{CURRENT} \times \text{VOLTAGE}$	P $P = I \cdot V$	WATTS W	

Feb 23-7:34 AM

Power in Appliances!

$$\text{Power} = \underline{I} \cdot V = \text{CURRENT} \times \text{VOLTAGE}$$

↳ MEASURED IN WATTS

	P	V	I	R
LAB.	O	O	X	X
CAL	X	X	O	O

What's a kW? KILOWATTS = 1000 WATTS

- * Can work with one other person.
- * Get one appliance all the way done for sure
Try to get 2 done!
- * Can do more on the back for extra credit.
- * Help each other understand. Ask if still confused.

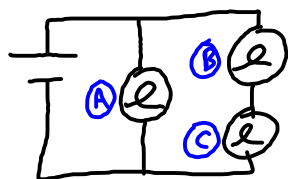
Mar 21-7:21 AM

What did you find?

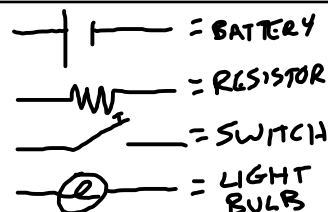
TOASTER	\$13.44	800W
SPEAKERS	\$ 0.08	5W
HAIR DRYER	\$ 25	1500W
SEWING MACHINE	\$ 0.08	4.8W
KNIFE	~\$2	132W

Mar 24-7:46 AM

Circuit Puzzles: Predict, explain, observe



ALL BULBS
ARE IDENTICAL



1) HOW WILL THE BRIGHTNESSES OF THE 3 BULBS COMPARE? ($A=B=C$? $A>B>C$? ...)

Observation: $A > B = C$

Explanation: Electrons going down first path have only one resistor.

Same push from the battery gets twice the brightness when there's half the resistance.

B & C are in series so they have to have the same current (and brightness).

2) IF I UNSCREWED (B) (OR IT BURNED OUT), WHAT WOULD HAPPEN TO (A) & (C)?

Observation: A stayed the same. C went out.

Explanation: Thinking of Circuitopia airport, if one line had a passport checker AND visa checker, that line would just stop if one went on break.

The other line that only required one check would just keep doing what it was doing, no matter how many other lines are open.

Mar 23-7:45 AM

Daily 3 Questions

CP homework - Find a major appliance at your house and complete table

- * Every day except test/project days
- * 3 Questions on the topics of the day
- * Main source of daily points
- * I am happy to give credit when I have no concerns about someone giving or getting help with the answers.

You can't get your points if you don't have your NAME!!!

Name	Period
1.	
2.	
3.	

Sep 9-7:32 AM

1. Power = current x VOLTAGE

2) What are the units for measuring power?

WATTS

3) Which costs more to run for a week: a dryer or a speakers?

Feb 18-6:59 AM